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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/072,830	02/08/2002	Dong Feng Chen	ERM-105.01	2287

25181 7590 04/21/2004

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EXAMINER	
CHERNYSHEV, OLGA N	
ART UNIT	**PAPER NUMBER**
1646	

DATE MAILED: 04/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/072,830	CHEN ET AL.	
	Examiner	Art Unit	
	Olga N. Chernyshev	1646	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on 02/23/04.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-26 and 31-37 is/are pending in the application.

4a) Of the above claim(s) 1-6,10-21,25,26 and 31-33 is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 7-9, 22-24, 34-37 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claims 27-30 have been cancelled, claims 7, 9, 22 and 24 have been amended and claims 34-37 have been added as requested in the amendment of Paper filed on February 23, 2004. Claims 1-26 and 31-37 are pending in the instant application.

Claims 1-6, 10-21, 25-26 and 31-33 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in Paper No. 11.

Claims 7-9, 22-24 and 34-37 are under examination in the instant office action.

2. The Text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Any objection or rejection of record, which is not expressly repeated in this action has been overcome by Applicant's response and withdrawn.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 7-9, 22-23 and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen D. F. et al., (reference C15 of IDS submitted on November 15, 2002) in view of Chen R.-W. et al. (reference C18).

Claims 7-9, 22-23 and 34-37 are directed to a method for stimulating axon growth of a neural cell by contacting the cell with an amount of lithium or salt thereof sufficient to stimulate axon growth and confirming that axonal growth occurred. Chen D. F. et al. disclose a new strategy for the treatment of injuries to the nervous system establishing that expression of *Bcl-2* is required for the promotion of the growth and regeneration of retinal axons (see abstract, Figure 3 and especially page 436) using primary cultures of murine retinal cells and organotypic co-culture. Chen D. F. et al. do not expressly disclose using lithium as a factor to stimulate axon growth or the use of peripheral nervous system cells or human cells.

Chen R.-W. et al. disclose that lithium (LiCl used in concentrations 0.5-5 mM) increases *Bcl-2* expression in cerebral granule cells. At the time invention was made, it would have been *prima facie* obvious to a person of ordinary skill in the art to use lithium as an agent to stimulate axonal growth. One of ordinary skill in the art would have been motivated to do this because if according to the document of Chen D. F. et al. increase in *Bcl*-2 expression leads to stimulation of axon growth, which is also supported by the data regarding anti-apoptotic function of Bcl-2 reviewed in the same article (see page 437), an agent that increases *Bcl-2* expression would promote axon regeneration, such agent being disclosed to be lithium by Chen R.-W. et al.. Moreover, because mice are considered to be a well-established animal model for most of the animal research, one would be motivated to use lithium on human neural cells, if available.

7. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Zhang et al (reference C12) in view of Chen R.-W. et al. (reference C18).

Claim 24 is directed to a method for stimulating axon growth of a neural cell that is differentiated *in vitro* from a stem cell by contacting the neural cell with lithium. Zhang et al. disclose that overexpression of Bcl2 cDNA induced extensive neurite outgrowth in Paju tumor cells, which are neural-crest-derived cells (stem cells) that spontaneously undergo differentiation. Zhang et al. do not expressly teach using lithium for neurite outgrowth.

Chen R.-W. et al. disclose that lithium increases *Bcl-2* expression in cultured cerebral granule cells. At the time invention was made, it would have been *prima facie* obvious to a person of ordinary skill in the art to use lithium as an agent to stimulate axonal growth of a neural cell that is differentiated *in vitro* from a stem cell. One of ordinary skill in the art would have been motivated to do this because the document of Zhang et al. clearly establishes the

growth-promoting function of *Bcl-2* specifically with regard to neurite outgrowth in neural cells that are differentiated *in vitro* from stem cells, therefore, an agent, such as lithium disclosed by Chen R.-W. et al., that increases *Bcl-2* expression would promote axon regeneration.

Conclusion

8. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Olga N. Chernyshev whose telephone number is (571) 272-0870. The examiner can normally be reached on Monday to Friday 9 AM to 5 PM ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yvonne Eyler can be reached on (571) 272-0871. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Certain papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax center located in Crystal Mall 1 (CM1). The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)0. NOTE: If Applicant *does* submit a paper by fax, the original signed copy should be retained by Applicant or Applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers.

Official papers filed by fax should be directed to (703) 872-9306. If this number is out of service, please call the Group receptionist for an alternative number. Faxed draft or informal

communications with the examiner should be directed to (571) 273-0870. Official papers should NOT be faxed to (571) 273-0870.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Olga N. Chernyshev, Ph.D.

OLGA N. CHERNYSHEV, PH.D.
PATENT EXAMINER